Economic and Social Values and Benefits

Debbie Proctor

Forest-based tourism is a powerful economic force in Wisconsin. Newport State Park, Door County.

Economic Values and Benefits

Note: the information for this section comes from Marcoullier and Mace, 1998.

In many parts of the state, forests are essential to economic activity. Tourism and timber production contribute significantly to the state's overall economy. Other, less quantifiable, economic returns of forests include environmental benefits like carbon sequestration, erosion control, and heat mitigation. Forests also have an impact on land values and business recruitment.

Estimating the economic impacts of forest use raises a complex set of issues that are only partially addressed through traditional means. The reasons for this are many. Two primary difficulties specific to forest resources include the simple facts that: 1) forests provide the raw material for a substantial amount of economic activity but they are not the sole input into the production process; and 2) many of the values we associate with forests are of a non-market nature.

In analyzing the contributions of forest resources and activities to economic growth, it has been argued that a more accurate view of the situation could be achieved through a more 'green' accounting structure that integrates the level

Robert Queen

Wood-based industry is very important to the Wisconsin economy, especially in the Northern Mixed Forest. Northern Highland American Legion State Forest.

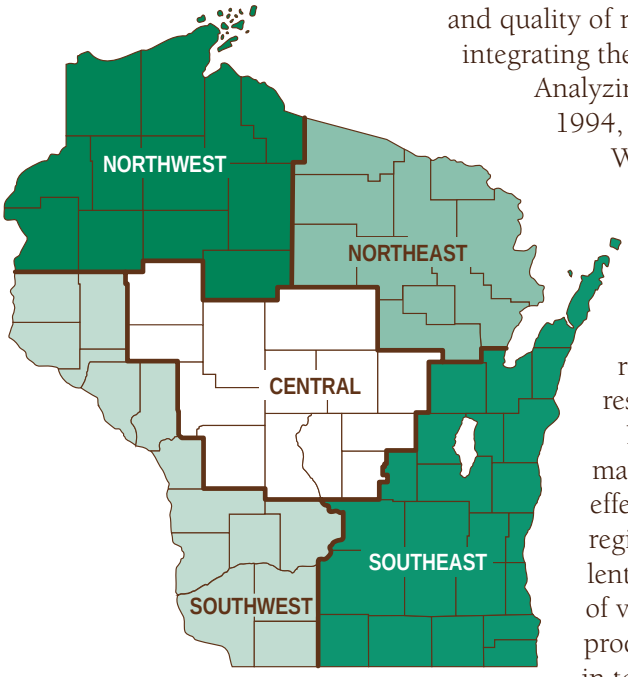


Figure 25

Regional delineations used by Marcoullier and Mace (1998) for their study

and quality of resource stocks into regional economic models. However, models integrating these ideas have not yet been developed.

Analyzing two clearly forest-based economic activities showed that, in 1994, roughly 12% of the Gross State Product and 18% of the jobs in Wisconsin are tied to either wood-based industries or tourism sensitive sectors.

A simple measure of the resource stock can be inferred from the ratio of growth to removals of timber. A value greater than one indicates a growing resource base, less than one indicates a shrinking base. Statewide, Wisconsin's growth to removals ratio is above one. Therefore, we know that the forest resource base is expanding in the state as a whole.

It is clear that forests provide the primary means of support for many families in Wisconsin. Forest-based activities have a dramatic effect on the viability of regional households in both rural forested regions and in regions where wood-based manufacturing is prevalent. The employee compensation (wages paid to workers) portion of value added accounted for approximately 25% of total wood products output and 35% of tourism-sensitive output. Average jobs in tourism-sensitive sectors earned almost $11,000 per year while wood-based industries paid approximately $36,800 per year. These figures are compared to average statewide earnings per job of just under $25,000 per year.

The forest that these economic activities rely on is extremely varied in extent and character throughout the state. It follows that there are significant regional differences in the extent and character of timber-related activity and tourism, as well.

For example, even though much of the reconstituted wood products sector (paper-making) is focused in the southeastern region, wood-products and tourism sensitive sectors account for only about 10% of this region's output. In northeast Wisconsin, on the other hand, almost 30% of the regional output is tied to wood products and tourism. Indeed, the central and northern parts of the state are much more reliant upon wood products and tourism sensitive firms for regional economic activity when compared to the southeastern portion of the state.

Wood-based Industries

Traditionally, forest-based economics has referred to the wood-based industries. Logging and paper-making are intertwined with the state's economic and cultural history. What is now termed the "wood-based industries"—timber production, primary and secondary wood processing and reconstituted wood products production—is still a very important portion of Wisconsin's economy.

Timber production is the growth of trees, the annual output of which is reflected in the stumpage values of removals. Stumpage value is a measure of the pre-harvest value of standing timber. It is the value of the timber to the owner. Primary wood processing begins with timber harvesting (logging) and includes sawmills and other primary log processors. Secondary wood processing includes the value-added sectors of turning dimensional timber into final use products such as wooden cabinets or furniture. Finally, reconstituted wood products include those industries that reconstitute wood fibers into final products, examples of which include fiberboard manufacturing and the pulp/paper industry.

Greatwood Log Homes

The wood products sector that provides products like this log home accounts for 30% of northeast Wisconsin's regional output. Elkhart Lake.

Table 4: Selected characteristics for wood-based sectors in Wisconsin, in millions of dollars *(State of Wisconsin, 1994)*

Industry output	MM$	Employee compensation (MM$)	Employment (# of jobs)
Wood-based sectors			
Timber production	209.001	34.303	3,152
Primary wood processing	956.862	152.635	7,346
Secondary wood processing	3,412.918	954.96	37,925
Reconstituted wood products	10,346.688	2,510.89	50,895
Total in wood based sectors	14,925.469	3,652.788	99,318
Total (all sectors)	242,514.17	76,201.309	3,070,532

In 1994, timber production provided a partial basis for primary, secondary and reconstituted wood products sector activity that accounted for approximately 6% of Wisconsin's gross state product—roughly $15 billion of $242 billion. The bulk of timber production occurs on non-industrial private forest lands with a surprising amount of sawtimber value being realized in the southwestern part of the state.

Over 1,800 companies in the timber industry employ over 99,000 people in Wisconsin, with a total payroll of more than $3.6 billion.

The market value of timber is influenced by the species or type of tree harvested, the size or product class, and the harvest costs. In general, hardwood species are more valuable than softwoods. Some of the more valuable

Table 5: Value of annual timber removals in Wisconsin in millions of 1996 dollars

Ownership type and product class	NW	NE	CTRL	SW	SE	Total
Public forests, federal						
sawtimber	3.063	10.829	0.459	0.0	0.0	14.351
pulpwood	2.216	2.426	0.38	0.0	0.059	5.081
Public forests, state						
sawtimber	0.974	0.648	1.539	0.548	0.0	3.709
pulpwood	0.225	0.406	0.528	0.009	0.0	1.168
Public forests, county						
sawtimber	3.707	1.666	2.376	0.004	0.0	7.753
pulpwood	1.829	2.436	1.715	0.06	0.0	6.04
Private forests, industrial						
sawtimber	2.76	8.481	0.195	0.0	0.0	11.436
pulpwood	1.435	1.5	0.144	0.0	0.0	3.079
Private forests, non-industrial						
sawtimber	11.754	18.828	50.226	51.21	8.369	140.385
pulpwood	4.847	4.457	5.239	1.745	0.701	16.989
Total	32.81	51.677	62.801	53.57	9.129	209.991

Terry Mace

Wood-based industries are an important contributor to Wisconsin's economy.

species include red and white oak, walnut and hard maple. Less valuable hardwoods include aspens, birch, and soft maples. Softwood species (conifers) tend not to vary as much in value from species to species.

Size of harvested trees is another important feature as it determines what uses the timber is suited for. The larger and more valuable size class is called sawtimber, and timber that meets the sawtimber size requirements is used for veneer and dimensional uses. Pulpwood, or poletimber, is the other, less valuable, size class. Pulpwood is used in reconstituted wood products and paper-making.

The cost associated with harvest and marketing is the third element determining timber's value. Generally, transportation cost is the largest determinant in the cost of harvest. This is directly influenced by how far away the timber is harvested from its destination.

Across Wisconsin, there is a wide range of forest management activity and harvesting intensity. The stumpage value of timber harvesting in Wisconsin during 1996 is shown in Table 5. This is shown by product class, land ownership, and region. As can be seen from Table 5, there was roughly $210 million worth of timber harvested during 1996, the bulk (roughly 82%) of which originated from privately owned forestlands.

More specifically, most (91% of the privately owned timber) harvest value in 1996 took place on lands owned by non-industrial private forestland owners. Of the harvest value originating from publicly owned forest lands, federal lands—namely lands managed by the USDA Forest Service—accounted for roughly 50%, county-owned timber harvests made up about 36% and state lands accounted for 14%. For public lands, the highest value from sawtimber came from federal lands, while the highest value from pulpwood came from county lands.

Regional differences were also an interesting feature of removals. Most of the timber stumpage value in Wisconsin during 1996 was removed from lands located in the central and southwestern parts of the state. Certainly, this speaks to the simple fact that value reflects species type and product class. While the forests of the northern part of the state produced the highest volumes, much of what was harvested was of relatively lower value. A good example simply compares the value of aspen and birch (two of the important species of the north) with the value of walnut and oak (two of the important species of the southwest).

Beyond the timber harvest, the value-added wood industries are also important economic contributors to the state. The reconstituted wood products—specifically pulp and paper—dominate with over $10 billion of output and just over 50,000 jobs across Wisconsin. Indeed, Wisconsin is a national leader in the production of tissue products. Timber production and primary wood processing are dwarfed when compared to this highly capital intensive set of industries.

Wisconsin ranks first in the nation in paper production, forest industry value of shipments, and employee compensation. As a result, the United States Forest Service considers Wisconsin the number one state in forest industries.

Tourism

In addition to timber related activities, tourism is the other major forest-based economic activity. The value of forest-based recreation to regional economies focuses on the additional demand for local businesses that occurs when people

DNR Photo Archives

Wisconsin's forests provide opportunities to experience nature personally.

from outside the region visit with the expressed intent of undertaking forest-based recreation. The dollars they spend provide additional opportunities for local businesses. Unfortunately, delineating the specific contributions of forest-based tourism to the overall transportation, retail, and service sectors is difficult. The primary difficulty lies in the fact that these are the same businesses that serve the local population. However, it is generally accepted that certain types of businesses are sensitive to tourism demands, such as transportation, restaurants, gift shops, and hotels, motels and recreational/amusement firms.

Wisconsin households spend over $5.5 billion per year on goods and services associated with forest-based recreation. Of this total spending, roughly $2.5 billion are spent in local regions within close proximity of the recreational site. This provided a significant portion of the receipts of tourism-sensitive sectors in Wisconsin. These sectors accounted for another 6% of gross state product, roughly $14 billion of $242 billion.

With respect to tourism sensitive sectors, tourism retail sectors dominate with almost $10 billion of output and roughly 350,000 jobs. To be sure, the jobs in tourism retail are not the same types of jobs offered by the reconstituted wood products sector. In general, tourism retail jobs are more apt to be seasonal, part-time and pay substantially lower wages than manufacturing jobs.

Table 6: Selected economic characteristics for tourism industry in Wisconsin, in millions dollars *(State of Wisconsin, 1994)*

	Industry output (MM$)	Employee compensation (MM$)	Employment (#of jobs)
Tourism sensitive sectors			
Tourist transport	1,364.252	391.437	27,215
Tourism retail	9,622.395	3,581.742	346,804
Tourism services	2,764.316	876.312	73,240
Total for tourism sensitive sectors	13,750.963	4,849.491	447,259
Total (all sectors)	242,514.170	76,201.309	3,070,532

Recognizing the connectedness of forest-based tourism and the wood-based industries can help managers and planners understand more fully the many economic benefits of the forests.

Social Values and Benefits

Note: The information for this section was taken from Marcouiller, et. al., 1998 and the DNR Draft Statewide Comprehensive Outdoor Recreation Plan, 2000–2005.

In the social and cultural arena, we encounter some of the most deeply felt and complex values related to the forest. These values are difficult to quantify, but not the less significant for their intangible nature. We walk in the crisp autumn air, kicking up sweet wet aspen leaves as we go. We sit silently in tree stands, watching squirrels play tag in an oak, awaiting the arrival of an elusive white-tail. We gather together as families to camp along sparkling streams. We feel pride in knowing that Wisconsin harbors some of the most beautiful forests in the world. We are happy to contemplate our children and grandchildren enjoying the same forests that we cherish today.

Whether through recreation, aesthetic enjoyment, ethnic activities, or knowledge of its existence, countless Wisconsinites value the forests for social and cultural reasons. In surveys conducted by the Wisconsin Department of Natural Resources, our citizens rank the importance of conservation of natural resources and recreation a 9 on a scale of 1 to 10, in front of many other issues on the state's list of priorities. Most of us believe that everyone benefits from conserving our natural resources [WDNR, 1998].

Recreation

Wisconsin forests provide a vast array of recreational opportunities. Some, like hunting and wildlife study, have had a place in Wisconsin since the very first humans arrived. Others, like mountain biking and snowmobiling, are relatively recent phenomena. A large majority of Wisconsin residents participate in outdoor recreation. Wisconsin is a state of hardy outdoor enthusiasts, active throughout the year.

DNR Photo Archives

Hunting has long been one of the most important forest-based recreational activities in Wisconsin.

Activities and People

The most important forest-based recreational activities in Wisconsin are hunting, camping, snowmobiling, hiking, fishing, all terrain motor vehicle (ATMV) use, watching wildlife, off-road biking, cross country skiing, horseback riding, plant collecting, and pack animal use. The people who participate in each activity are referred to as *user groups*. User groups have various characteristics that we can use to help us understand their patterns of use and likely future needs.

What are the people like who use Wisconsin's forests for recreation? Through surveys and other studies, recreation planners have come up with some general ideas about the characteristics of people who use the forests for recreation. Some of these numbers are based on information from DNR's State Comprehensive Outdoor Recreation Plan and refer to characteristics of outdoor recreationists as a whole, including but not limited to forest-based recreationists.

Edwin E. Proutor

Cross country skiing is a popular winter sport in Wisconsin's snow-covered forests.

In general, male outdoor recreationists tend to out-number female 2 to 1.

About 65% of recreationists have some college education.

In general, most people using the forest for recreation are satisfied about issues like rules and regulations and access to public lands.

Recreationists tend to be concerned about issues like trespass, crowding and appearance of timber harvest.

Summer is the most popular season to be out in the forest, followed by fall, spring, and winter.

A person's satisfaction level about their chosen recreation activity is related to accessibility to the activity. If people who like to camp are able to get to a nice campground when they want to, they tend to be satisfied with their experience. If a snowmobiler needs to travel two hours to get to an appropriate trail, they are likely to be unsatisfied with their experience.

Table 7 indicates the most popular, wholly forest-based, recreational activities.

Figure 26

Wisconsin forest recreation by season, 1996

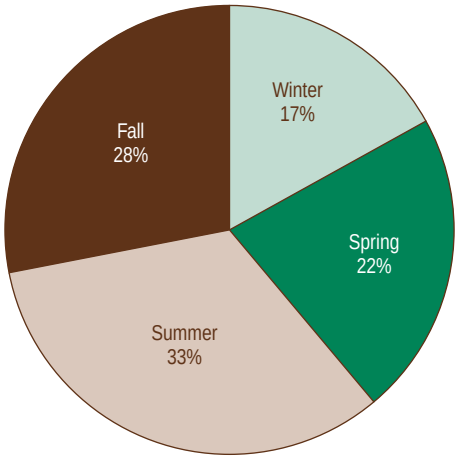


Table 7: Wisconsin forest-based recreation by activity and percent participation, 1998

Activity	Percent	Activity	Percent
Fishing	34.26	Own recreation vehicles	9.21
Wildlife viewing	27.61	Canoeing	8.56
Camping (tent)	26.93	Camping (RV)	5.91
Picnicking	26.69	ATV	5.82
Nature study/Bird watching	21.17	Backpacking, wilderness camping	5.52
Hunting with firearm	19.21	Cross country skiing	5.37
Bird watching	18.41	Mt. biking, off road	4.76
Nature photography	17.03	Horseback riding	4.61
Hiking	13.22	Snowshoeing	1.41
Own a vacation home	12.78	Off-highway vehicle—trucks	0.92
Snowmobiling	10.47	Off-highway vehicle—motorcycles	0.52

Robert Queen

Summer is Wisconsin's most popular season for forest-based recreation like camping.

In addition to those listed on the table, other activities often take place in or are enhanced by, forests. For many people, much of the appeal of pleasure driving, exercise walking, and jogging comes from being in or near forests.

There are some aspects of Wisconsin forest recreation that are changing. People are participating in many new activities—in part due to new products, in part to revival or expansion of existing activities. The following is a list of the forest-based recreational activities enjoying the largest growth.

Robert Queen

Trails offer new opportunities for forest recreation. Biking, hiking, jogging and cross-country skiing are popular trail activities. Bear Skin Trail, Minoqua.

DNR Photo Archives

Forest trails offer opportunities for people of varying abilities to participate in forest-based recreation. Whitefish Dunes State Park.

Trail-Based Activities: One of the most notable recreation phenomena of the 1990s was the growth in the popularity of trails. A number of factors have contributed to this growth, including the conversion of abandoned rail lines to recreation trails and the recognition of trails as a means to connect dispersed recreation sites. The various activities that take place on trails are often vying for the same resource, placing pressure on the trail to provide for multiple uses. Trail activities include exercise walking, bicycling, hiking, in-line skating, running/jogging, roller-skating, mountain biking, all terrain vehicles (ATVs), cross country skiing, horseback riding, snowshoeing, off highway vehicle (OHV) truck driving, and OHV motorcycle driving.

Motorized Users: A trend that is having a major effect on forest recreation is the increasing use of motorized vehicles. Snowmobiles, ATVs, 4x4 trucks, and motorbikes are seen in Wisconsin forests increasingly often. For example, from 1990 to 1997, snowmobile licenses in the state increased 33%, and ATV licenses increased 50%.

Mountain Biking: Another growing activity in Wisconsin and throughout the U.S. is mountain biking. Before the early 1990s, the vast majority of bicycles bought were traditional road bikes. Now, mountain bikes account for 90% of bikes purchased in the United States. The number of cyclists who ride in forests is correspondingly increasing.

Hiking and Backpacking: Hiking and backpacking are perennial forest recreational activities. Participation hit a peak in the early '90s. Since then, they have decreased slightly, but are expected to remain important uses of the forests.

RV Camping: Camping with use of recreational vehicles is increasing. Sixteen percent of Wisconsin adults have expressed interest in purchasing an RV in the next 5 years, and many families with children prefer the amenities of RV camping.

Robert Queen

Snowmobiling and other motorized uses are becoming more popular activities in Wisconsin's forests. Brule River State Forest.

Bonnie Gruber

Horseback riding has experienced a surge in participants. Governor Dodge State Park.

Horseback riding: Percentage-wise, horseback riding has grown phenomenally in the last 5 years. The number of user days increased by 290% from 1992 to 1996. Much of this use is forest trail-based.

Snowshoeing: Snowshoeing is experiencing a revival in Wisconsin's forests. It appeals to summer athletes trying to stay in shape, families that want to recreate in the winter, and people interested in trying "new" activities. Although still a small percentage of total users, this activity has grown significantly.

Kayaking: Another activity undergoing renovation is kayaking. New variations on an old theme, like sea kayaking, boogie boards, and river kayaking, have contributed to explosive growth in this activity. Kayaking, while not an inherently forest-based activity, takes place on rivers that rely on forests for their aesthetic beauty as well as water quality.

User Conflicts

Unfortunately, the wide variety of activities enjoyed by Wisconsin residents sometimes results in user conflicts. Conflicts between motorized and non-motorized users are becoming more important. The interface between passive uses like hiking and wildlife viewing and motorized activities like snowmobiling or ATV use often results in debate.

In addition, various groups have different perceptions about what is compatible with their own recreation style. Usually groups are more tolerant of recreationists enjoying activities similar to their own. For example, a cyclist feels less crowded by other cyclists than the same number of people riding ATVs, and vice versa.

E. Vlack

Conflicts between motorized and non-motorized recreationists are becoming more common, especially where they share trails. Black River State Forest.

Dean Tvedt

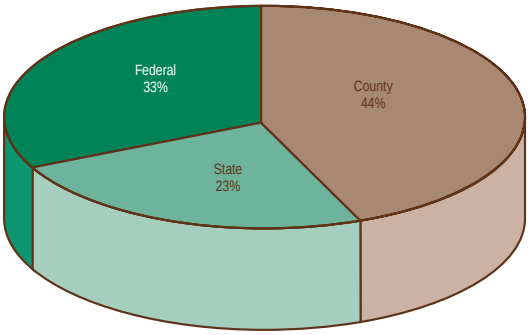
Bow-hunters as well as gun hunters tend to use private land.

Recreational Land and Facilities

Just as the activities that Wisconsin forest recreationists choose to participate in are wide in range, so too is the land and facilities that are used. All classes of ownership, region, and amenity level are represented in the land used for recreation.

Figure 27

Public conservation and recreation land, Wisconsin, 1998



Land ownership

Ownership of recreational land varies from small county parks to the national forests, from large tracts of forest industry land to small private woodlots. Ownership often determines the accessibility of the land for recreation.

The land people use for recreation varies by recreational activity. Non-consumptive users tend to recreate on state land, and overall, state parks are the most popular recreation sites. Hunters tend to hunt on non-industrial private land. Motorized users are also more likely to use private land. However, all groups use a variety of land, and many individuals use more than one site for recreation.

Region

Some regions of the state are preferred over others for recreation sites. This may be due to population, natural features, or built improvements. Often preferences are based on the availability of facilities for particular recreation type.

Southeast: most popular region for recreation; many campers and wildlife watchers; few horseback riders

Southwest: many campers and wildlife watchers; few snowmobilers; very few anglers

Central: popular with almost all groups; many campers and wildlife watchers

Northeast: popular with almost all groups; many snowmobilers, anglers, campers and wildlife watchers; few horseback riders

Northwest: many campers and wildlife watchers; few hikers, off-road bikes, horseback riders, ATV users

State Forests

The northern state forests—the Brule River, the Flambeau River, the Black River, Governor Knowles, and the Northern Highland-American Legion State Forests—provide some of the best opportunities for forest recreation in the state. Many recreationists throughout the year visit these forests. A look at the participation rates for various activities provides a more concentrated look at the state's forest recreation patterns.

Wisconsin forests offer a stunning array of recreational opportunities and provide enjoyment and leisure to millions of people each year. The variety of forest types, ownership, seasons and interests found in this state work in concert to provide quality recreational opportunities for Wisconsin's people.

Table 8: Number of participants in selected activities, northern Wisconsin state forests

Activity	Number of participants in 1997
Family camping	238, 230
Outdoor group camping	6,572
Indoor group camping	1,903
Canoe	32,969
Other camping (hunt, wilderness camp, backpack)	14,318
Swimmers, picnickers	227,110
Canoeists	118,339
Boaters, anglers	481,741
Hunters	226,697
Hikers	62,504
Snowmobilers, ATV	264,456
Skiers	63,093
Mountain bikers	54,724
Horses	3,131
Other users	996,774

DNR Photo Archives

Wisconsin provides opportunities for wildlife watching throughout the state.

Debbie Proctor

Families enjoy a naturalist's presentation in the fall.

Compatibility of Forest Uses

Note: This information comes from Marcouiller and Mace, 1998.

There is a general perception that timber production and recreational use are mutually exclusive; specifically, that forest planners and community development practitioners must recognize a trade-off between the two and plan accordingly. Regional analysis often pits the two alternative forest uses (timber production and recreation) against each other and fails to address the core issues of compatibility between uses. A certain level of land-use compatibility could serve as an important driver of local economic policy prescriptions.

Although most forest managers understand this general concept, it is often difficult to adequately measure the success of multiple-use management. The variety of demands and the limited resources of public agencies create difficulties in this sort of assessment. Performance measures used to assess the effectiveness of this comprehensive provision, all too often, are reactive and deteriorate into an assessment of the level and extent of stakeholder complaints. Perceived conflicts in management of forests include both inter-use conflict (between two different uses like timber production and recreation) and intra-use conflict (conflict within a broad use category, for example between birdwatchers and motorized recreationists). Both of these types of conflicts should be addressed and minimized for successful multi-use management. Inter-use conflict will be discussed in this section.

Inter-use conflicts

Timber production and recreation are the base of the wood-based industries and the tourism-sensitive sectors, respectively.

Some forest-based recreationists exhibit skepticism about timber harvesting; much of this focuses in the appearance of on-site environmental effects. Basically, recreationists think that some harvests are ugly, and they also worry about the environmental effects of timber production.

Forest openings are one by-product of harvest. In addition to affecting the biological forest growth, these openings have an impact on the values and benefits that recreationists derive from forest land. When asked, recreationists indicated that encountering large forest openings on forestland bothered them and detracted from their recreational experience.

However, when asked to agree or disagree with a statement that said that intermittent clearings have important wildlife benefits most recreationists generally agreed, especially hunters. Moreover, in general respondents agreed with the statement that forest-based recreation is generally compatible with timber harvesting activities. Response to this statement differed among recreationists. Hunters were more apt to agree with this than quiet recreationists were.

Although quiet recreationists (hikers, bikers, bird watchers, photographers, etc.) may indicate a concern about compatibility, most did agree that timber production and harvest is a legitimate use of the forest.

Local Land-use Regulation and Economic Development

Note: This information comes from Marcouiller and Mace, 1998.

Another issue affecting forest management is land-use regulation. Land-use regulation is a public policy issue that has been a rallying cry for both property rights advocates and environmentalists. Results point out that clear consensus on these issues is elusive. However, there does seem to be a general understanding that property rights to manage forest lands begin with the owner of the land. Furthermore, recreational users reveal a stronger feeling that land-use should be locally determined.

It has been the prevailing belief that recreational users' attitudes are shaped by their outsiders' view of the forest as primarily a recreational resource. However, outsiders are more sensitive to local needs than has been thought. In general, forest-based recreationists appear to understand the need to develop economic activities in local regions where they recreate.

In general, recreational users felt that important strategies for improving local conditions included the growing and harvesting of trees and strategies that help existing businesses remain viable. Of less importance were strategies that target wood processing industries and general tourism development. Respondents were much less interested in Native American casino development, mining and the processing of minerals, and the general attraction of manufacturing firms as important strategies for rural community quality of life.

Timber production and recreation both provide value-added opportunities and represent equally important directions in forest use. More importantly, however, both also rely on the health, productivity, and management of the same raw material—Wisconsin's forest and natural resource base.

Robert Queen

Many water-based recreation activities exist within forests, including fishing.